

Goals and Objectives

Ambulatory/Office-based anesthesia rotation

Over the past 20 years more than 50% of all surgical procedures have moved to the ambulatory setting, with an estimated 1.2 million procedures performed in an office-based setting in 2001 alone. Although residents are usually extremely well prepared to care for elderly obese diabetic patients undergoing vascular surgical procedures, anesthesia programs have historically not taught to the ambulatory and office-based setting. Since most residents will ultimately provide services for patients in the ambulatory setting, we have created a rotation designed to prepare the resident for the typical private practice.

Patient Care

Residents will provide anesthetic care for patients in the ambulatory and office-based settings. Patients will range in age from the very young to the very old, and all surgical specialties will be represented.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Medical Knowledge

Residents will demonstrate knowledge of the following topics:

Post-operative nausea and vomiting
Phase 1 and 2 recovery
Setting up an office-based practice
Office surgery accreditation
Pain control in the ambulatory setting
The 23 hour stay
Anesthetic challenges for cosmetic surgery
Preoperative screening and the usefulness of preoperative patient contact
Regional versus general anesthesia for the short ambulatory procedure
Paralysis for the brief pediatric procedure
Airway devices for use in the ambulatory setting
Intravenous regional anesthesia
Caudal blocks in the ambulatory setting
Retrolbulbar/peribulbar blocks
Monitored anesthesia care

Assessment Tools:

- 1) Checklist of topics to be included in education file
- 2) Post-rotation test to be included in education file
- 3) Direct observation and reported on post-rotation evaluation

Practice-based Learning & Improvement

Residents must demonstrate the ability to update their knowledge base by locating, appraising, and assimilating scientific evidence as it pertains to the patients in the ambulatory and office-based settings. Online computer access will be available in the perioperative area, so that up-to-date evidence-based medical information can be readily accessed. Residents are also expected to teach medical students in the operating room when so assigned.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Interpersonal & Communications Skills

Residents will demonstrate the ability to communicate needs efficiently and clearly (and professionally) to the ASC/office nursing staff. This includes not only verbal skills, but also written skills (including handwriting). Furthermore, residents must demonstrate the ability to clearly communicate with surgical residents and faculty.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Professionalism

Professionalism and interpersonal skills frequently go hand-in-hand. Residents will demonstrate the ability to interact professionally with the permanent ASC/office staff (nursing and support personnel) as well as with the many "transient" health-care providers that pass through on a daily basis. Furthermore, residents must maintain a professional image at all times, especially with respect to patients and their parents/visiting family members.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Systems-based Practice

Residents will demonstrate an understanding of the unique challenges inherent in ambulatory and office-based practice, with a focus on efficient care that minimizes patient risks and maximizes patient satisfaction. Residents will practice cost-effective health care and resource allocation through evidence-based medical practice that does not compromise quality of care.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Goals and Objectives

Cardiothoracic anesthesia rotation

Cardiac and thoracic procedures provide significant challenges to anesthetic management of elderly, frail, and ill patients. The goals of this rotation are to teach CA2 and CA3 residents the management of these patients undergoing intrathoracic procedures, both on and off cardiopulmonary bypass. Advanced cardiac and pulmonary physiology in the ill adult and child will be emphasized, as will basic principles of transesophageal echocardiography.

Patient Care Residents will provide anesthetic care for patients undergoing cardiac and thoracic procedures in both adults and children at Beaumont Hospital in Royal Oak. Procedures will include elective, urgent, and emergent cardiac (on and off "pump"), intrathoracic vascular, and pulmonary cases.

Assessment tools:

1) Direct observation and reported on post-rotation evaluation

Medical Knowledge Residents will demonstrate knowledge of the following topics:

- Cardiopulmonary bypass: initiation
- Cardiopulmonary bypass: cessation
- Cardiopulmonary bypass: the mechanics of the pump
- Cardioplegia
- "Off pump" cardiac surgery
- Coronary artery bypass grafting
- Valve replacement (mitral & aortic)
- Pacemakers
- AICDs
- Heart transplant
- Hypothermic circulatory arrest
- Lung isolation indications and techniques
- Transesophageal echocardiography
 - Indications
 - Techniques
 - Advantages
 - Disadvantages
 - Imaging modes
 - Common views
- Advanced cardiovascular pharmacology
 - Epinephrine
 - Norepinephrine
 - Phenylephrine
 - Dopamine
 - Dobutamine
 - Amiodarone
 - Milrinone
 - Nitroglycerine
 - Nitroprusside
 - Aminocaproic acid
 - Heparin
 - Protamine

Assessment Tools:

- 1) Checklist of topics to be included in education file
- 2) Post-rotation test to be included in education file
- 3) Direct observation and reported on post-rotation evaluation

Practice-based Learning & Improvement

Residents must demonstrate the ability to update their knowledge base by locating, appraising, and assimilating scientific evidence as it pertains to the patients in the OR. Online computer access will be available in the perioperative area, so that up-to-date evidence-based medical information can be readily accessed. Residents are also expected to teach medical students in the operating room when so assigned.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Interpersonal & Communications Skills

Residents will demonstrate the ability to communicate needs efficiently and clearly (and professionally) to the OR nursing staff. This includes not only verbal skills, but also written skills (including handwriting). Furthermore, residents must demonstrate the ability to clearly communicate with surgical residents and faculty.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Professionalism

Professionalism and interpersonal skills frequently go hand-in-hand. Residents will demonstrate the ability to interact professionally with the permanent OR staff (nursing and support personnel) as well as with the many "transient" health-care providers that pass through on a daily basis, including but not limited to surgeons, Xray technicians, anesthesia technologists, and perfusionists. Furthermore, residents must maintain a professional image at all times, especially with respect to patients and their family members.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Systems-based Practice

Residents will demonstrate an understanding of university-based cardiac surgery practice, including its interactions with other specialties, both medical and surgical. Residents will practice cost-effective health care and resource allocation through evidence-based medical practice that does not compromise quality of care.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Goals and Objectives

Cardiothoracic anesthesia rotation (advanced)

Cardiac and thoracic procedures provide significant challenges to anesthetic management of elderly, frail, and ill patients. The goals of this rotation are to teach senior residents the management of these patients and to allow them to master the complex concepts of cardiovascular changes associated with coronary artery bypass grafting and valvular surgery. Transesophageal echocardiography will be emphasized, and residents will be expected to have a working knowledge of appropriate intraoperative TEE use.

Patient Care

Residents will provide anesthetic care for patients undergoing cardiac and thoracic procedures in both adults and children at Beaumont Hospital in Royal Oak. Procedures will include elective, urgent, and emergent cardiac (on and off "pump"), intrathoracic vascular, and pulmonary cases.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Medical Knowledge Residents will demonstrate knowledge of the following topics:

- a) Ischemic Heart Disease
 - 1) riskfactors; predictors of perioperative risk, modification of perioperative risk(e.g.,prophylactic beta-blockers)
 - 2) manifestations
 - 3) diagnosis of myocardial infarction; clinical, ECG, enzymes, echocardiography, nuclear techniques
 - 4) pharmacological treatment of angina, thoracic epidural for angina, interventional cardiologic techniques
 - 5) determinants of myocardial oxygen requirements and delivery,silent ischemia, postoperative ischemia
 - 6) perioperative diagnosis and treatment of ischemia; ECG,TEE
 - 7) coronary artery bypass procedures; cardiopulmonary bypass; off-pump techniques
- b) Valvular Heart Disease
 - 1) classification
 - 2) diagnosis (including echocardiography),natural history, surgical management
 - 3) anesthetic considerations
 - 4) subacute bacterial endocarditis prophylaxis
- c) Rhythm Disorders and Conduction Defects
 - 1) chronic abnormalities: etiology, diagnosis, therapy
 - (a) Automated Implantable Cardioverter/Defibrillator (AICD) implantation
 - (b) pacemakers: permanent, temporary, transvenous, transcutaneous; ventricular synchronization
 - (c) ablations, cryotherapy, Maze procedure

- 2) perioperative dysrhythmia: etiology, diagnosis, therapy
- 3) perioperative implications of pacemaker and AICD
- d) Heart Failure and Cardiomyopathy (Ischemic, Viral, Hypertrophic)
 - 1) definition and functional classification, perioperative diagnosis and treatment
 - 2) compensatory responses
 - 3) right or left ventricular dysfunction
 - (a) etiology
 - (b) signs and symptoms
 - (c) diagnostic tests
 - (d) systolic vs. diastolic dysfunction
 - 4) treatment
 - (a) pulmonary edema
 - (b) pulmonary hypertension
 - (c) cardiogenic shock
 - 5) cardiac transplantation
- e) Cardiac Tamponade and Constrictive Pericarditis
 - 1) etiology
 - 2) diagnosis; TEE, PA catheter
 - 3) anesthetic management
- f) Circulatory Assist
 - 1) cardiopulmonary bypass
 - (a) components (pump, oxygenator, heat exchanger, filters)
 - (b) cardiopulmonary bypass techniques
 - (c) mechanisms of gas exchange
 - (d) priming solutions, hemodilution
 - (e) anticoagulation and antagonism; Activated Clotting Time (ACT) and other clotting times, heparin assays, antithrombin III, protamine reactions, heparin and protamine alternatives
 - (f) prophylaxis with aminocaproic acid, tranexamic acid, and aprotinin
 - (g) anesthetic considerations during bypass
 - (h) extracorporeal membrane oxygenation (ECMO)
 - (i) cooling and warming, deep hypothermic circulatory arrest
 - (j) monitoring, blood pressure management
 - (k) minimally invasive bypass techniques
 - (l) myocardial preservation: physiology, techniques, complications
 - (m) preconditioning
 - 2) intraaortic balloon: rationale, indications, limitations
 - 3) ventricular assist devices and artificial heart: internal and external
- g) Pulmonary Embolism
 - 1) etiology: blood, air, fat, amniotic fluid
 - 2) diagnosis, TEE findings
 - 3) treatment; acute, preventive
- h) Hypertension
 - 1) etiology, pathophysiology, course of disease
 - 2) drug treatment, interactions with anesthetics, risk of anesthesia
 - 3) intra or postoperative hypertension

(a) differential diagnosis and treatment

Assessment Tools:

- 1) Checklist of topics to be included in education file
- 2) Post-rotation test to be included in education file
- 3) Direct observation and reported on post-rotation evaluation

Practice-based Learning & Improvement

Residents must demonstrate the ability to update their knowledge base by locating, appraising, and assimilating scientific evidence as it pertains to the patients in the OR. Online computer access will be available in the perioperative area, so that up-to-date evidence-based medical information can be readily accessed. Residents are also expected to teach medical students in the operating room when so assigned.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Interpersonal & Communications Skills

Residents will demonstrate the ability to communicate needs efficiently and clearly (and professionally) to the OR nursing staff. This includes not only verbal skills, but also written skills (including handwriting). Furthermore, residents must demonstrate the ability to clearly communicate with surgical residents and faculty.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Professionalism

Professionalism and interpersonal skills frequently go hand-in-hand. Residents will demonstrate the ability to interact professionally with the permanent OR staff (nursing and support personnel) as well as with the many "transient" health-care providers that pass through on a daily basis, including but not limited to surgeons, Xray technicians, anesthesia technologists, and perfusionists. Furthermore, residents must maintain a professional image at all times, especially with respect to patients and their family members.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Systems-based Practice

Residents will demonstrate an understanding of university-based cardiac surgery practice, including its interactions with other specialties, both medical and surgical. Residents will practice cost-effective health care and resource allocation through evidence-based medical practice that does not compromise quality of care.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Goals & Objectives

CA 1 general rotation

The CA1 year is a year of rapid learning and acquisition of procedural skills. Residents are paired with faculty (2:1) for the first 6 weeks, after which they continue to be closely supervised until they achieve a level of comfort commensurate with their abilities. There is a daily lecture covering the basics of anesthetic practice for the first month, and the Medical Knowledge topics listed below are designed to give the residents a firm foundation on which to build the subsequent two years of training.

Patient Care

Residents will provide anesthetic care for patients undergoing a wide variety of procedures at Beaumont Hospital in Royal Oak. Although we try to assign simpler cases to new residents, a typical busy academic hospital does not allow for a ready assortment of "easy" or "beginner" cases, so the CA1 residents should anticipate a broad exposure to patient types and procedures.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Medical Knowledge Residents will demonstrate knowledge of the following topics:

Definition of MAC

ASA physical status classification system

Rapid sequence induction/intubation

The ASA difficult airway algorithm

Laryngeal mask airway indications/contraindications

Regional/neuroaxial anesthesia

Doses, advantages, disadvantages, pharmacodynamic/kinetic properties of commonly used drugs, including

Pentothal

Propofol

Etomidate

Ketamine

Succinylcholine

Cisatracurium

Rocuronium

Vecuronium

Mivacurium

Pancuronium

Fentanyl

Morphine

Neostigmine

Glycopyrrolate

Atropine

Ephedrine

Phenylephrine

Epinephrine

Esmolol

Labetalol

Midazolam

Metoclopramide

Ranitidine

Ondansetron

Droperidol
Meperidine
Mallampati classification system
NPO guidelines
Compound A
Machine check
Circle system
Monitors
"Standard"
Invasive blood pressure monitoring
Central venous pressure monitoring
PA catheter
Capnography
Twitch monitoring
Extubation criteria
Hypertension
Hypotension
Tachycardia
Bradycardia
Dysrhythmias
Hemodynamic responses to intubation/extubation
Phase 1 and 2 blockade with succinylcholine

Assessment Tools:

- 1) Checklist of topics to be included in education file
- 2) Post-rotation test to be included in education file
- 3) Direct observation and reported on post-rotation evaluation

**Practice-based
Learning &
Improvement**

Residents must demonstrate the ability to update their knowledge base by locating, appraising, and assimilating scientific evidence as it pertains to the patients in the OR. Online computer access will be available in the perioperative area, so that up-to-date evidence-based medical information can be readily accessed. Residents are also expected to teach medical students in the operating room when so assigned.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

**Interpersonal &
Communications
Skills**

Residents will demonstrate the ability to communicate needs efficiently and clearly (and professionally) to the OR nursing staff. This includes not only verbal skills, but also written skills (including handwriting). Furthermore, residents must demonstrate the ability to clearly communicate with surgical residents and faculty.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation
- 2) Nursing evaluation

Professionalism

Professionalism and interpersonal skills frequently go hand-in-hand. Residents will demonstrate the ability to interact professionally with the permanent OR staff (nursing and support personnel) as well as with the many "transient" health-care providers that pass through on a daily basis,

including but not limited to surgeons, Xray technicians, anesthesia technologists, perfusionists, and neuromonitoring technicians. Furthermore, residents must maintain a professional image at all times, especially with respect to patients and their visiting family members.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation
- 2) Nursing evaluation

**Systems-based
Practice**

Residents will demonstrate an understanding of the pharmacoeconomics of anesthetic medications, and how they relate to the greater hospital pharmacy budget. Safety/quality issues will be introduced and discussed at monthly QA conferences, and discussions in the OR will include

Correct site/side verification techniques
Timing and administration of prophylactic antibiotics
Timing and administration of prophylactic thrombolytics

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation
- 2) Cost education/assessment tool

Goals & Objectives
CA 2 general rotation

The CA2 year is primarily comprised of subspecialty rotations, each of which have their own goals and objectives as outlined elsewhere in this booklet. Residents still, however, rotate on the "general" service a few times during the year at both the Royal Oak and Troy campuses, and this is an excellent opportunity to fill in gaps of knowledge which are not otherwise covered in the subspecialties or during the first year. The topics and other competency-based objectives outlined below are intended to supplement knowledge gained elsewhere during the 2nd year, and to reinforce lessons learned as a CA1.

Patient Care Residents will provide anesthetic care for patients undergoing a wide variety of procedures at both the Royal Oak and Troy campuses of Beaumont Hospital. Care will include preoperative evaluation, intraoperative management, and immediate PACU care.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Medical Knowledge Residents will demonstrate knowledge of the following topics:

Cardiac physiology in the adult and child
Respiratory physiology in the adult, child, and neonate
Preparation for, and anesthetic management of the following patient populations

- Neonate
- Infant
- Child
- Trauma
- Bariatric
- Geriatric
- ENT
- Urology
- Orthopedic
- Plastic surgery
- Gynecology
- Surgical oncology
- Cardiothoracic
- Vascular

Routine anesthetic management of patients with the following disease states

- COPD
- Restrictive lung disease
- Coronary artery disease
- Peripheral vascular disease
- Cerebral vascular disease
- Pheochromocytoma
- Malignant hyperthermia
- Diabetes
- Hypertension
- Depression
- Chronic pain
- Acute and chronic alcohol abuse
- Acute and chronic drug abuse
- Cirrhosis

Acute and chronic renal failure/insufficiency
Elevated intracranial pressure
CHF

Assessment Tools:

- 1) Checklist of topics to be included in education file
- 2) Post-rotation test to be included in education file
- 3) Direct observation and reported on post-rotation evaluation
- 4) Mock oral board examination
- 5) ABA inservice examination

**Practice-based
Learning &
Improvement**

Residents must demonstrate the ability to update their knowledge base by locating, appraising, and assimilating scientific evidence as it pertains to the patients in the OR. Online computer access will be available in the perioperative area, so that up-to-date evidence-based medical information can be readily accessed. Residents are also expected to teach medical students in the operating room when so assigned. CA2 residents will also be expected to present articles at the monthly journal club conference. CA2 residents will also continually improve their airway management skills, and will (along with the other classes) participate in the difficult airway workshop. Furthermore, CA2 residents will complete a minimum number of advanced airway techniques to include fiberoptic intubation, etc.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation
- 2) Advanced airway technique checklist

**Interpersonal &
Communications
Skills**

Residents will demonstrate the ability to communicate needs efficiently and clearly (and professionally) to the OR nursing staff. This includes not only verbal skills, but also written skills (including handwriting). Furthermore, residents must demonstrate the ability to clearly communicate with surgical residents and faculty.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Professionalism

Professionalism and interpersonal skills frequently go hand-in-hand. Residents will demonstrate the ability to interact professionally with the permanent OR staff (nursing and support personnel) as well as with the many "transient" health-care providers that pass through on a daily basis, including but not limited to surgeons, Xray technicians, anesthesia technologists, perfusionists, and neuromonitoring technicians. Furthermore, residents must maintain a professional image at all times, especially with respect to patients and their visiting family members.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

**Systems-based
Practice**

Residents will demonstrate an understanding of the pharmacoeconomics of anesthetic medications, and how they relate to the greater hospital pharmacy budget. Safety/quality issues will be introduced and discussed at monthly QA conferences, and discussions in the OR will include

Correct site/side verification techniques

Timing and administration of prophylactic antibiotics

Timing and administration of prophylactic thrombolytics

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation
- 2) Cost education/assessment tool

Goals & Objectives

CA 3 advanced clinical rotation

The CA3 year is a year of maturation and an opportunity for residents to move towards independent practice. Many choose subspecialty rotations or pursue research opportunities (via the research track) for much of this year, however the "advanced clinical" rotation usually still comprises the bulk of training. The goal of this year is to produce an independent, self-sufficient, competent and safe anesthesiologist. Cases tend to be more complex, and patients tend towards the extremes of age and weight. Supervision is still necessary, but less direct, and residents are expected to be able to formulate a complete plan of perioperative management.

All CA3 residents will be also be assigned the duty of "team leader" while on call, which nominally falls under the auspices of the advanced clinical rotation. The team leader is responsible for aiding the call faculty in the scheduling of emergency and add-on cases and for pre-operative optimization of those cases. The team leader also responds to codes on the wards and emergency room, and aids in facilitating transfer of these patients to the operating room if necessary.

Patient Care

Residents will provide anesthetic care for patients undergoing a wide variety of procedures at the Royal Oak and Troy campuses of Beaumont Hospital. Care will include preoperative evaluation, intraoperative management, and immediate PACU care. Attempts will be made to assign cases that are more complex or represent a greater anesthetic challenge to the CA3 resident whenever possible.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Medical Knowledge

Residents will demonstrate knowledge of the following topics:

Providing anesthesia at a remote location
Anesthesia for adult and pediatric endoscopy
Office-based anesthesia
Regional anesthesia in patients with neuromuscular deficits
General anesthesia for the obstetric patient having emergency surgery
Anesthesia for the adult and pediatric cardiac patient having non-cardiac surgery
Anesthesia for bariatric procedures
Anesthesia for robotic surgery
Anesthesia for endovascular AAA repair
Coagulopathy
Lung isolation indications and techniques
Ultrasound-guided central venous access

Assessment Tools:

- 1) Checklist of topics to be included in education file
- 2) Post-rotation test to be included in education file
- 3) Direct observation and reported on post-rotation evaluation
- 4) Mock oral board examination
- 5) ABA inservice examination

Practice-based Learning & Improvement

Residents must demonstrate the ability to update their knowledge base by locating, appraising, and assimilating scientific evidence as it pertains to the patients in the OR. Online computer access will be available in the perioperative area, so that up-to-date evidence-based medical information can be readily accessed. Residents are also expected to teach medical students in the operating room when so assigned. CA3 residents are also expected to present journal club articles and prepare a senior topic for presentation to the department as a whole.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation
- 2) Senior topic presentation evaluation

Interpersonal & Communications Skills

Residents will demonstrate the ability to communicate needs efficiently and clearly (and professionally) to the OR nursing staff. This includes not only verbal skills, but also written skills (including handwriting). Furthermore, residents must demonstrate the ability to clearly communicate with surgical residents and faculty.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Professionalism

Professionalism and interpersonal skills frequently go hand-in-hand. Residents will demonstrate the ability to interact professionally with the permanent OR staff (nursing and support personnel) as well as with the many "transient" health-care providers that pass through on a daily basis, including but not limited to surgeons, Xray technicians, anesthesia technologists, perfusionists, and neuromonitoring technicians. Furthermore, residents must maintain a professional image at all times, especially with respect to patients and their visiting family members.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Systems-based Practice

Residents will participate in a "Transition to Practice" seminar. Topics will include billing, insurance, Medicare/Medicaid, contracting, group/hospital negotiations, and CRNA/AA supervision.

Assessment tools:

- 1) Transition to practice seminar attestation and evaluation

Goals and Objectives

Critical care rotation

The goal of the ICU rotation is to provide the resident with a suitable background in critical care medicine. Residents should acquire a sufficient knowledge base to participate as expert anesthesia consultants in the care of critically ill patients, both in and out of the perioperative period. Residents who complete the curriculum should have the ability to deal with simple and straightforward problems in critical care medicine. The experience should also be sufficient to allow residents to decide whether they would like to pursue a fellowship in critical care medicine.

Patient Care

Residents will provide care for patients admitted to the surgical critical care service. Residents on the service will act as both consultants and primary care providers for these patients, working in conjunction with the admitting surgical service.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Medical Knowledge Residents will demonstrate knowledge of the following topics:

- Cardiovascular system
- Shock
- Invasive monitoring
- Myocardial ischemia
- Hyper and hypotension
- Echocardiography
- ACLS
- Transport of the critically ill patient
- Respiratory system
- ARDS
- COPD/Asthma
- Restrictive disease
- Pneumonia/pneumonitis
- Ventilator management (including weaning)
- Chest radiography and computed tomography
- Blood gas analysis
- Neurologic system
- CBF vs. ICP
- Cerebral vasospasm
- Management of intracranial pressure monitors
- Management of traumatic brain injury
- Renal/electrolytes
- Acute and chronic renal failure
- Common and uncommon electrolyte derangements
- SIADH
- Diabetes insipidus
- Hemo and peritoneal dialysis
- Management of oliguria
- Rhabdomyolysis
- Infectious disease
- Sepsis
- Systemic inflammatory response syndrome
- Antimicrobial therapy

Ventilator associated pneumonia
Line sepsis
Immunocompromised patients
Gastrointestinal and endocrine
Diabetes
Hyperglycemia
Adrenal dysfunction
The acute abdomen
GI bleeds
Cirrhosis
Acute hepatic failure
Total parenteral nutrition
Pharmacology
Hypnotics
Paralytics
Pain management for the ICU patient
Antiarrhythmics
Vasoactive drugs
Antimicrobials
Ethics
Death and dying
Brain death assessment
The transplant donor
Palliative care
Advanced directives
Surrogate decision makers

Assessment Tools:

- 1) Checklist of topics to be included in education file
- 2) Post-rotation test to be included in education file
- 3) Direct observation and reported on post-rotation evaluation

**Practice-based
Learning &
Improvement**

Residents must demonstrate the ability to update their knowledge base by locating, appraising, and assimilating scientific evidence as it pertains to the patients on the critical care service. Online computer access will be available in the ICUs, so that up-to-date evidence-based medical information can be readily accessed. Residents will assist and perform procedures under direct supervision and analyze practice experience and perform practice-based improvement activities using a systematic methodology to improve proficiency. Residents must also demonstrate their ability to educate the nursing staff about complex patients, new techniques, or new medications on a daily basis as needed during routine management.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation
- 2) Nursing evaluation

**Interpersonal &
Communications
Skills**

Residents will demonstrate the ability to communicate needs efficiently and clearly (and professionally) to the critical care nursing staff. This includes not only verbal skills, but also written skills (including handwriting). Furthermore, residents must demonstrate the ability to clearly communicate with referring and consulting physicians and other healthcare providers in the critical care setting.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation
- 2) Nursing evaluation

Professionalism

Professionalism and interpersonal skills frequently go hand-in-hand. Residents will demonstrate the ability to interact professionally with the permanent ICU staff (nursing and support personnel) as well as with with the many "transient" health-care providers that pass through on a daily basis, including but not limited to surgeons, anesthesiologists, cardiologists, and respiratory therapists. Residents must maintain a professional image at all times, especially with respect to patients and their parents/visiting family members.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation
- 2) Nursing evaluation

Systems-based Practice

Residents will demonstrate an understanding of resource utilization in the critical care environment. The critical care environment represents the highest percentage of healthcare expenditures for most hospitals, and the practice of cost-effective health care with an eye towards efficient and evidence-based resource allocation is vital. Residents will also understand the aspects of RBRVS billing and how critical care billing differs from the more familiar unit-based anesthesia billing system.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Goals and Objectives

Neurosurgical anesthesia rotation

Neurosurgery is a rapidly evolving field of medicine that provides numerous challenges to anesthesiology practice. Cases as diverse as intracranial aneurysm clipping, coiling of lesions in the interventional radiology suite, and awake procedures for Parkinson's disease provide ample opportunity to learn about neurophysiology and the challenges unique to neuroanesthesia. The goals of this rotation are to become familiar with the breadth of neurosurgical procedures, and manage complex cases with a myriad of neurophysiologic challenges.

Patient Care Residents will provide anesthetic care for patients undergoing a wide variety of neurosurgical procedures including spine, intracranial, and interventional neuroradiology cases.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Medical Knowledge Residents will demonstrate knowledge of the following topics:

CBF and ICP relationships
CBF autoregulation
Effects of drugs and hypothermia on CMRO₂
Advantages and disadvantages of hyperventilation in the brain injured patient
Hemodynamic goals in the brain injured patient
Mannitol and steroids in the management of elevated ICP
Hypertonic saline in the management of elevated ICP
Anesthesia for interventional neuroradiology procedures
The awake craniotomy
Management of a lumbar drain
Benefits and risks of red cell salvage/cell saver management
Anesthetic management of the patient for intracranial aneurysm clipping
Burst suppression and barbiturate coma
Evoked potentials monitoring
Cushing's triad
Positioning concerns in the prone patient
Venous air embolism
Postoperative blindness
Glasgow coma scale
Adolescent scoliosis repair
Deep brain stimulation for Parkinson's Disease

Assessment Tools:

- 1) Checklist of topics to be included in education file
- 2) Post-rotation test to be included in education file
- 3) Direct observation and reported on post-rotation evaluation

Practice-based Learning & Improvement

Residents must demonstrate the ability to update their knowledge base by locating, appraising, and assimilating scientific evidence as it pertains to the patients in the OR. Online computer access will be available in the perioperative area, so that up-to-date evidence-based medical information can be readily accessed. Residents are also expected to teach medical students in the operating room when so assigned.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Interpersonal & Communications Skills

Residents will demonstrate the ability to communicate needs efficiently and clearly (and professionally) to the OR nursing staff. This includes not only verbal skills, but also written skills (including handwriting). Furthermore, residents must demonstrate the ability to clearly communicate with surgical residents and faculty.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Professionalism

Professionalism and interpersonal skills frequently go hand-in-hand. Residents will demonstrate the ability to interact professionally with the permanent OR staff (nursing and support personnel) as well as with the many "transient" health-care providers that pass through on a daily basis, including but not limited to surgeons, Xray technicians, anesthesia technologists, neuromonitoring technicians. Furthermore, residents must maintain a professional image at all times, especially with respect to patients and their visiting family members.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Systems-based Practice

Residents will demonstrate an understanding of private neurosurgical practice, including its interactions with other specialties, both medical and surgical. Residents will practice cost-effective health care and resource allocation through evidence-based medical practice that does not compromise quality of care.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Goals and Objectives

Neurosurgical anesthesia rotation (advanced)

Neurosurgery is a rapidly evolving field of medicine that provides numerous challenges to anesthesiology practice. Cases as diverse as intracranial aneurysm clipping, coiling of lesions in the interventional radiology suite, and awake procedures for Parkinson's disease provide ample opportunity to learn about neurophysiology and the challenges unique to neuroanesthesia. The goals of the advanced rotation are to reinforce knowledge of the basics of neurosurgical anesthesia while allowing the resident to experience more complex cases and master the nuances involved in cases wherein neurological stability and neurologic monitoring are required.

Patient Care

Residents will provide anesthetic care for patients undergoing a wide variety of neurosurgical procedures including spine, intracranial, and interventional neuroradiology cases.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Medical Knowledge

Residents will demonstrate knowledge of the following topics:

- 1) seizures
- 2) coma: traumatic, infectious, toxic-metabolic, cerebrovascular accident (CVA), cerebral hypoxia
 - (a) Glasgow Coma Scale, management of traumatic brain injury
 - (b) therapeutic barbiturate coma
- 3) drug intoxication (CNS drugs, carbon monoxide, insecticides, nerve gases)
- 4) paraplegia, quadriplegia, spinal shock, autonomic hyperreflexia
- 5) tetanus
- 6) special problems of anesthesia for neurosurgery
 - (a) increased intracranial pressure: tumors, hematomas, hydrocephalus
 - (b) positioning: prone, sitting, other, head stabilization in tongs
 - (c) air embolism
 - (d) cerebral protection from hypoxia, ischemia, glucose effects
 - (e) aneurysms and A-V malformations, cerebral vasospasm
 - (f) interventional neuroradiology; coils and embolization
 - (g) pituitary adenomas, trans-sphenoidal hypophysectomy
 - (h) anesthetic and ventilatory effects on cerebral blood flow and metabolism
 - (i) fluid management: hypertonic vs isotonic saline vs. balanced salt solutions
 - (j) spinal fluid drainage
 - (k) stereotactic and gamma-knife techniques, deep brain stimulator placement, intra-operative wake-up techniques

(l) ventriculostomy

Assessment Tools:

- 1) Checklist of topics to be included in education file
- 2) Post-rotation test to be included in education file
- 3) Direct observation and reported on post-rotation evaluation

Practice-based Learning & Improvement

Residents must demonstrate the ability to update their knowledge base by locating, appraising, and assimilating scientific evidence as it pertains to the patients in the OR. Online computer access will be available in the perioperative area, so that up-to-date evidence-based medical information can be readily accessed. Residents are also expected to teach medical students in the operating room when so assigned.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Interpersonal & Communications Skills

Residents will demonstrate the ability to communicate needs efficiently and clearly (and professionally) to the OR nursing staff. This includes not only verbal skills, but also written skills (including handwriting). Furthermore, residents must demonstrate the ability to clearly communicate with surgical residents and faculty.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Professionalism

Professionalism and interpersonal skills frequently go hand-in-hand. Residents will demonstrate the ability to interact professionally with the permanent OR staff (nursing and support personnel) as well as with the many "transient" health-care providers that pass through on a daily basis, including but not limited to surgeons, Xray technicians, anesthesia technologists, neuromonitoring technicians. Furthermore, residents must maintain a professional image at all times, especially with respect to patients and their visiting family members.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Systems-based Practice

Residents will demonstrate an understanding of private neurosurgical practice, including its interactions with other specialties, both medical and surgical. Residents will practice cost-effective health care and resource allocation through evidence-based medical practice that does not compromise quality of care.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Goals and Objectives

Obstetric anesthesia rotation

Obstetric anesthesia is an exciting and challenging field. Patients are typically young and healthy, however they can be difficult to manage due to both unique physiology and disease states. Goals of this rotation are to expose residents to the routine and emergent care of the parturient. Residents will learn to manage analgesia for the laboring patient, and will be able to provide anesthesia for elective, urgent, and emergent cesarean section.

Patient Care

Residents will provide anesthetic care for parturients requesting labor analgesia, as well as patients needing cesarean section on an elective, urgent, and emergent basis. Residents will also provide anesthesia for other routine obstetric procedures including, but not limited to cerclage and tubal ligation.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Medical Knowledge Residents will demonstrate knowledge of the following topics:

1. Maternal Physiology
 - a) Effects Of Pregnancy On Uptake And Distribution
 - b) respiratory (anatomy, lung volumes and capacities, oxygen consumption, ventilation, blood gases, acid base)
 - c) cardiovascular (aorto-caval compression, regulation of uterine blood flow)
 - d) renal
 - e) liver (albumin/globulin ratio, protein binding of drugs)
 - f) gastrointestinal (gastric acid, motility, anatomic position, gastroesophageal sphincter function)
 - g) hematology (blood volume, plasma proteins, coagulation)
 - h) placenta
 - 1) placental exchange – O₂, CO₂
 - 2) placental blood flow
 - 3) barrier function
2. Maternal-Fetal
 - a) Pharmacology
 - 1) anesthetic drugs and adjuvants
 - 2) oxytocic drugs (indications, adverse effects)
 - 3) tocolytic drugs (indications, adverse effects)
 - 4) antiseizure drugs; interactions (magnesium sulfate)
 - 5) mechanisms of placental transfer, placental transfer of specific drugs
 - 6) fetal disposition of drugs
 - 7) drug effects on newborn
 - b) Amniotic Fluid (Amniocentesis, Oligohydramnios, Polyhydramnios)
 - c) Antepartum Fetal Assessment and Therapy (Ultrasonography, FHR Monitoring, nonstress test, stress test, biophysical profile)
 - d) Anesthetic Techniques and Risks (Elective Vs. Emergency,

General Vs Regional)

- 1) systemic medications: opioids, sedatives, inhalational agents
- 2) regional techniques
 - (a) epidural, caudal, spinal, combined spinal/epidural
 - (b) paracervical block, lumbar sympathetic block, pudendal block
- 3) complications (aspiration, nerve palsies)
- e) Physiology of Labor (Metabolism, Respiration, Cardiovascular, Thermoregulation)
- f) Influence of Anesthetic Technique on Labor
- g) Cesarean Delivery: Indications, Urgent/Emergent, Anesthetic Techniques and Complications, Difficult Airway, Aspiration Prophylaxis

Assessment Tools:

- 1) Checklist of topics to be included in education file
- 2) Post-rotation test to be included in education file
- 3) Direct observation and reported on post-rotation evaluation

Practice-based Learning & Improvement

Residents must demonstrate the ability to update their knowledge base by locating, appraising, and assimilating scientific evidence as it pertains to the patients in the OR. Online computer access will be available in the perioperative area, so that up-to-date evidence-based medical information can be readily accessed. Residents will place numerous spinals and epidurals and will analyze practice experience and perform practice-based improvement activities using a systematic methodology to improve block proficiency.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Interpersonal & Communications Skills

Residents will demonstrate the ability to communicate needs efficiently and clearly (and professionally) to the OR nursing staff and to patients. Consent for labor epidural placement should be communicated in an efficient and effective manner. Furthermore, residents must demonstrate the ability to clearly communicate with obstetric residents and faculty.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation
- 2) Nursing evaluation

Professionalism

Professionalism and interpersonal skills frequently go hand-in-hand. Residents will demonstrate the ability to interact professionally with the permanent obstetric staff (nursing and support personnel), and must maintain a professional image at all times, especially with respect to patients and their visiting family members.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation
- 2) Nursing evaluation

**Systems-based
Practice**

Residents will understand the rationale for and participate in hospital initiatives to improve quality and efficiency in the delivery room and obstetric operating rooms.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Goals and Objectives

Obstetric anesthesia rotation (advanced)

Obstetric anesthesia is an exciting and challenging field. Patients are typically young and healthy, however they can be difficult to manage due to both unique physiology and disease states. Goals of the advanced rotation are to allow senior residents the opportunity to hone their epidural and spinal anesthetic skills while reinforcing the basics of obstetric anesthesia, and allowing them to master the more complex concepts of maternal-fetal medicine and peri-natal physiology.

Patient Care

Residents will provide anesthetic care for parturients requesting labor analgesia, as well as patients needing cesarean section on an elective, urgent, and emergent basis. Residents will also provide anesthesia for other routine obstetric procedures including, but not limited to cerclage and tubal ligation.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Medical Knowledge

Residents will demonstrate knowledge of the following topics:

Pathophysiology of Complicated Pregnancy

a) Problems During Pregnancy and Delivery

- 1) anesthesia for cerclage or non-obstetric surgery
- 2) ectopic pregnancy
- 3) spontaneous abortion
- 4) gestational trophoblastic disease (hydatid mole)
- 5) autoimmune disorders (lupus, antiphospholipid syndrome)
- 6) endocrine (thyroid, diabetes, pheochromocytoma)
- 7) heart disease (valvular disorders, pulmonary hypertension, congenital heart disease, arrhythmias, cardiomyopathy)
- 8) hematologic (sickle cell anemia, idiopathic thrombocytopenic purpura, von Willebrand disease, disseminated intravascular coagulation (DIC), anticoagulant therapy, Rh and ABO incompatibility)
- 9) hypertension (chronic, pregnancy-induced)
- 10) neurologic (seizures, myasthenia, spinal cord injury, multiple sclerosis, subarachnoid hemorrhage)
- 11) respiratory (asthma, respiratory failure)
- 12) renal
- 13) human immunodeficiency virus infection

b) Problems of Term and Delivery

- 1) intrapartum fetal assessment (fetal heart rate monitoring, fetal scalp blood gases, fetal pulse oximetry)
- 2) preeclampsia and eclampsia
- 3) supine hypotensive syndrome
- 4) aspiration of gastric contents
- 5) embolic disorders (amniotic fluid embolism, pulmonary thromboembolism)
- 6) antepartum hemorrhage (placenta previa, abruptio placenta, uterine

- rupture)
- 7) postpartum hemorrhage (uterine atony,placenta accreta)
- 8) cord prolapse
- 9) retained placenta
- 10) dystocia,malposition,and malpresentation (breech,transverse lie)
- 11) maternal cardiopulmonary resuscitation
- 12) fever and infection
- 13) preterm labor
- 14) vaginal birth after cesarean section (VBAC)
- 15) multiple gestation
- c) Resuscitation of Newborn
 - 1) Apgar scoring
 - 2) umbilical cord blood gas measurements
 - 3) techniques and pharmacology of resuscitation
 - 4) intrauterine surgery (maternal and fetal considerations,intrauterine fetal resuscitation)

Assessment Tools:

- 1) Checklist of topics to be included in education file
- 2) Post-rotation test to be included in education file
- 3) Direct observation and reported on post-rotation evaluation

Practice-based Learning & Improvement

Residents must demonstrate the ability to update their knowledge base by locating, appraising, and assimilating scientific evidence as it pertains to the patients in the OR. Online computer access will be available in the perioperative area, so that up-to-date evidence-based medical information can be readily accessed. Residents will place numerous spinals and epidurals and will analyze practice experience and perform practice-based improvement activities using a systematic methodology to improve block proficiency.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Interpersonal & Communications Skills

Residents will demonstrate the ability to communicate needs efficiently and clearly (and professionally) to the OR nursing staff and to patients. Consent for labor epidural placement should be communicated in an efficient and effective manner. Furthermore, residents must demonstrate the ability to clearly communicate with obstetric residents and faculty.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation
- 2) Nursing evaluation

Professionalism

Professionalism and interpersonal skills frequently go hand-in-hand. Residents will demonstrate the ability to interact professionally with the permanent obstetric staff (nursing and support personnel), and must maintain a professional image at all times, especially with respect to patients and their visiting family members.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation
- 2) Nursing evaluation

**Systems-based
Practice**

Residents will understand the rationale for and participate in hospital initiatives to improve quality and efficiency in the delivery room and obstetric operating rooms.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Goals and Objectives

PACU rotation

Anesthesia does not end when the endotracheal tube comes out! Our care extends into the postoperative period where rapid identification and safe management of complications are vital. Cramming all of PACU knowledge into 2 weeks can be a difficult (if not impossible) task, but at the conclusion of the rotation, residents will be expected to care for patients in the recovery area at, or near, the level of a consultant in anesthesiology. The resident will be expected to care for patients recovering from general, regional, or sedation anesthesia for all types of surgical procedures, and recognize, diagnose, and treat commonly occurring problems. Formal didactic and informal guided learning will be used to ensure acquisition of knowledge, and competencies will be addressed as follows.

Patient Care

Residents will receive report from the anesthetizing faculty/resident/CRNA as patients come to the PACU. They will then assume care, and provide medical management until the patient is discharged from the recovery area. They will work closely with the assigned attending and nursing staff to ensure optimal Patient Care and efficient recovery room throughput.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Medical Knowledge Residents will demonstrate knowledge of the following topics:

- Acute pain management in the PACU: management of epidurals
- Acute pain management in the PACU: IV medications
- Airway obstruction/management in the PACU
- Bradycardia in the PACU
- Delayed emergence from general anesthesia
- Discharge criteria
- Effects of Acidosis in the PACU
- Emergence delirium
- Flumazenil indications/dose/uses
- Hypertension in the PACU
- Hypotension in the PACU
- Hypothermia in the PACU: clinical consequences
- Hypoxia in the PACU
- Malignant hyperthermia
- Naloxone indications/dose/uses
- Physostigmine indications/dose/uses
- PONV in the PACU
- Tachycardia in the PACU
- TURP syndrome
- Postoperative shivering
- Oliguria
- Transfusion reactions
- Negative pressure pulmonary edema
- Aspiration syndrome
- Obstructive sleep apnea/CPAP

Assessment Tools:

- 1) Checklist of topics to be included in education file
- 2) Post-rotation test to be included in education file
- 3) Direct observation and reported on post-rotation evaluation

Practice-based Learning & Improvement

Residents must demonstrate the ability to update their knowledge base by locating, appraising, and assimilating scientific evidence as it pertains to the patients in the PACU. Online computer access will be available in the recovery area, so that up-to-date evidence-based medical information can be readily accessed. Residents must also demonstrate their ability to educate the nursing staff about complex patients, new techniques, or new medications on a daily basis as needed during routine management.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation
- 2) Nursing evaluation

Interpersonal & Communications Skills

Residents will demonstrate the ability to communicate needs efficiently and clearly (and professionally) to the PACU nursing staff. This includes not only verbal skills, but also written skills (including handwriting). Furthermore, residents must demonstrate the ability to clearly communicate with receiving hospital units when giving report for outgoing patients.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation
- 2) Nursing evaluation

Professionalism

Professionalism and interpersonal skills frequently go hand-in-hand. Residents will demonstrate the ability to interact professionally with the permanent PACU staff (nursing and support personnel) as well as with the many "transient" health-care providers that pass through on a daily basis, including but not limited to surgeons, anesthesiologists, cardiologists, and respiratory therapists. Furthermore, residents must maintain a professional image at all times, especially with respect to patients and their visiting family members.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation
- 2) Nursing evaluation

Systems-based Practice

Residents will demonstrate an understanding of the complex patient flow issues surrounding transfers to the wards and intensive care units. Operating room delays can cause PACU delays/overflow which can cause ICU delays/overflow which can cause ward delays/overflow which can cause operating room cancellations. Efficient PACU management and its impact on the hospital as a whole will be discussed with the PACU attending as part of daily rounds.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Goals and objectives

Acute pain rotation

Residents on the acute pain service will be managing patients in the immediate perioperative period. This rotation is more focused on regional anesthesia and opiates than chronic pain management tends to be, and most patients are only followed for days, rather than months or years as on the chronic service. All patients followed on the acute service are monitored at least on a daily basis to ensure that pain control is optimal while endeavoring to minimize untoward side effects. The goals of this rotation are to introduce the resident to challenges inherent in patients undergoing painful procedures, with an emphasis on regional anesthesia, epidural pain management, perioperative indwelling pain catheter placement, and PCA management.

Patient Care

Residents will provide anesthetic care for patients undergoing painful procedures that will benefit from epidural pain management, regional anesthesia (single-shot and indwelling catheter), and/or PCA management. Furthermore, patients whose pain has been deemed potentially difficult to manage in the perioperative period by the primary service will be assessed and treated on a daily basis by the acute pain team.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Medical Knowledge Residents will demonstrate knowledge of the following topics:

Opiate pharmacokinetics/dynamics
Postoperative epidural pain management
Ultrasound and stimulation guided nerve blocks
Interscalene
Infraclavicular
Axillary
Femoral/3-in-1
Sciatic
Popliteal
Ankle
Peripheral nerve catheters
Acute pain management in the opiate tolerant patient
Transition from intravenous to oral pain medications
PCA management
Regional anesthesia and anticoagulants

Assessment Tools:

- 1) Checklist of topics to be included in education file
- 2) Post-rotation test to be included in education file
- 3) Direct observation and reported on post-rotation evaluation

Practice-based Learning & Improvement

Residents must demonstrate the ability to update their knowledge base by locating, appraising, and assimilating scientific evidence as it pertains to the patients in the OR. Online computer access will be available in the perioperative area, so that up-to-date evidence-based medical information can be readily accessed. Residents will perform epidural and regional anesthesia skills under direct supervision and analyze practice experience and perform practice-based improvement activities using a systematic methodology to improve block proficiency

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Interpersonal & Communications Skills

Residents will demonstrate the ability to communicate needs efficiently and clearly (and professionally) to the perioperative nursing staff. This includes not only verbal skills, but also written skills (including handwriting). Furthermore, residents must demonstrate the ability to clearly communicate with surgical residents and faculty as well as ward personnel with whom they interact on daily rounds.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Professionalism

Professionalism and interpersonal skills frequently go hand-in-hand. Residents will demonstrate the ability to interact professionally with the permanent perioperative and pain staff (nursing and support personnel) as well as with the many health-care providers that interact with the pain team on a daily basis. Residents must maintain a professional image at all times, especially with respect to patients and their parents/visiting family members.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Systems-based Practice

Residents will demonstrate an understanding of a university-based acute pain team, including its interactions with other specialties, both medical and surgical. Residents will practice cost-effective health care and resource allocation through evidence-based medical practice that does not compromise quality of care. Residents will understand the aspects of RBRVS billing and how pain billing differs from unit-based anesthesia billing.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Goals and Objectives

Chronic pain rotation

Chronic pain is a sub-specialty of anesthesiology that is very much unlike its parent specialty. Rather than acutely caring for a critically ill patient in the operating room, chronic pain management is much more like a primary care practice, with outpatient visits focusing more on a focused history and physical and on the psychosocial needs of the pain patient. These visits are interspersed with minor procedures, nerve blocks, and major procedures performed in the operating room on patients that are frequently difficult and/or demanding. The goals of this rotation are to introduce the resident to the complex and challenging world of chronic pain management in the outpatient setting, and to give the resident experience with pain procedures such as the classic epidural steroid injection and state-of-the-art spinal cord stimulator insertion.

Patient Care

Residents will provide anesthetic care for patients undergoing painful procedures that will benefit from epidural pain management, regional anesthesia (single-shot and indwelling catheter), and/or PCA management. Furthermore, patients whose pain has been deemed potentially difficult to manage in the perioperative period by the primary service will be assessed and treated on a daily basis by the acute pain team.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Medical Knowledge Residents will demonstrate knowledge of the following topics:

- Pain pathways and mechanisms
- Neuropathic vs. sympathetically mediated pain
- Cancer pain
- The multidisciplinary pain center
- Opiate pharmacokinetics/dynamics
- Anticonvulsants used in pain practice: pharmacokinetics/dynamics
- Antidepressants used in pain practice: pharmacokinetics/dynamics
- Local anesthetics used in pain practice: pharmacokinetics/dynamics
- Anxiolytics used in pain practice: pharmacokinetics/dynamics
- Non-steroidal anti-inflammatory medications: pharmacokinetics/dynamics
- Acupuncture and other adjunctive therapies
- Drug abuse and addiction
- The chronic pain patient going to the OR
- Complex regional pain syndromes
- Fibromyalgia
- Interventional pain procedures and their complications
- Stellate ganglion block
- Celiac plexus block
- Lumbar sympathetic block
- Epidural steroid injection
- Spinal cord stimulator placement
- Facet block
- Sacroiliac joint injections
- Trigger point injections

Assessment Tools:

- 1) Checklist of topics to be included in education file
- 2) Post-rotation test to be included in education file
- 3) Direct observation and reported on post-rotation evaluation

Practice-based Learning & Improvement

Residents must demonstrate the ability to update their knowledge base by locating, appraising, and assimilating scientific evidence as it pertains to the patients in the chronic pain clinic. Online computer access will be available in the clinic, so that up-to-date evidence-based medical information can be readily accessed. Residents will assist and perform chronic pain procedures under direct supervision and analyze practice experience and perform practice-based improvement activities using a systematic methodology to improve block proficiency

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Interpersonal & Communications Skills

Residents will demonstrate the ability to communicate needs efficiently and clearly (and professionally) to the pain clinic nursing staff. This includes not only verbal skills, but also written skills (including handwriting). Furthermore, residents must demonstrate the ability to clearly communicate with referring physicians and consultants utilized in the pain practice.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Professionalism

Professionalism and interpersonal skills frequently go hand-in-hand. Residents will demonstrate the ability to interact professionally with the permanent pain clinic staff (nursing and support personnel) as well as with the health-care providers encountered during interventional procedures. Residents must maintain a professional image at all times, especially with respect to patients and their parents/visiting family members.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Systems-based Practice

Residents will demonstrate an understanding of a private chronic pain practice, including its interactions with other specialties, both medical and surgical. Residents will practice cost-effective health care and resource allocation through evidence-based medical practice that does not compromise quality of care. Residents will understand the aspects of RBRVS billing and how pain billing differs from unit-based anesthesia billing.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Goals and Objectives

Pediatric anesthesia rotation

As any pediatrician will tell you, children are not just small adults. Pediatric anesthesia encompasses a wide variety of surgical cases, patient ages (a neonate presents vastly different challenges vs. a teenager, yet convincing a teenager to relax for IV placement can be almost as difficult), and technical challenges. The goals of this rotation are to prepare the resident to provide safe anesthesia care to neonates, infants, children, and adolescents undergoing minor and major procedures under general, regional, or sedation anesthesia.

Patient Care

Residents will provide anesthetic care for patients undergoing a wide variety of pediatric procedures in the inpatient, outpatient, and remote settings. Residents will learn technical skills appropriate for the age of the patient, and reinforce their knowledge of physiology and pharmacology.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Medical Knowledge

Residents will demonstrate knowledge of the following topics:

Cardiovascular physiology: adult vs. pediatric vs. neonate
Volume of distribution: adult vs. pediatric vs. neonate
Age/size appropriate airway equipment
The pediatric difficult airway
The child with the airway foreign body
Diaphragmatic hernia repair
Gastroschisis/omphalocele
Pyloric stenosis
Tracheo-esophageal fistula
Vital signs: adult vs. pediatric vs. neonate
Hypothermia
Laryngospasm
Paradoxical air embolism
Malignant hyperthermia
NPO guidelines
Cystic fibrosis
Recent URI and elective surgery
Parental presence during induction
Downs syndrome

Assessment Tools:

- 1) Checklist of topics to be included in education file
- 2) Post-rotation test to be included in education file
- 3) Direct observation and reported on post-rotation evaluation

Practice-based Learning & Improvement

Residents must demonstrate the ability to update their knowledge base by locating, appraising, and assimilating scientific evidence as it pertains to the patients in the OR. Online computer access will be available in the perioperative area, so that up-to-date evidence-based medical information can be readily accessed. Residents are also expected to teach medical students in the operating room when so assigned.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Interpersonal & Communications Skills

Residents will demonstrate the ability to communicate needs efficiently and clearly (and professionally) to the OR nursing staff. This includes not only verbal skills, but also written skills (including handwriting). Furthermore, residents must demonstrate the ability to clearly communicate with surgical residents and faculty.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Professionalism

Professionalism and interpersonal skills frequently go hand-in-hand. Residents will demonstrate the ability to interact professionally with the permanent OR staff (nursing and support personnel) as well as with the many "transient" health-care providers that pass through on a daily basis, including but not limited to surgeons, Xray technicians, anesthesia technologists, perfusionists, and neuromonitoring technicians. Furthermore, residents must maintain a professional image at all times, especially with respect to patients and their parents/visiting family members.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Systems-based Practice

Residents will demonstrate an understanding of university-based pediatric surgical practice, including its interactions with other specialties, both medical and surgical. Residents will practice cost-effective health care and resource allocation through evidence-based medical practice that does not compromise quality of care.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Goals and Objectives

Pediatric anesthesia rotation (advanced)

As any pediatrician will tell you, children are not just small adults. Pediatric anesthesia encompasses a wide variety of surgical cases, patient ages (a neonate presents vastly different challenges vs. a teenager, yet convincing a teenager to relax for IV placement can be almost as difficult), and technical challenges. The goals of this rotation are to allow the senior resident to master the complex physiologic changes inherent in the anesthetized newborn and infant, and to feel comfortable caring for our smallest patients as they move to independent practice.

Patient Care

Residents will provide anesthetic care for patients undergoing a wide variety of pediatric procedures in the inpatient, outpatient, and remote settings. Residents will learn technical skills appropriate for the age of the patient, and reinforce their knowledge of physiology and pharmacology.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Medical Knowledge

Residents will demonstrate knowledge of the following topics:

1. Apparatus: Breathing Circuits, Humidity, Thermal Control
2. Premedication: Drugs; Dosage; Routes; Vehicles, Including Eutectic Mixture of Local Anesthetics (EMLA) Cream; Parental Presence
3. Agents and Techniques
 - a) Induction Techniques
 - b) Anesthetics: Actions Different From Adults
 - c) Neuromuscular Blockers (Sensitivity, Congenital Diseases, Complications of Succinylcholine)
 - d) Regional Anesthesia
4. Fluid Therapy and Blood Replacement, Physiologic Anemia, Glucose Requirements
5. Problems in Intubation (Full Stomach, Diaphragmatic Hernia, Tracheo-esophageal (T-E) Fistula, Pierre-Robin, Awake/Fiberoptic Intubation, Dentition)
6. Neonatal Physiology
 - a) Respiratory
 - 1) development, anatomy, surfactant
 - 2) pulmonary oxygen toxicity
 - 3) pulmonary function
 - 4) lung volumes vs. adult
 - 5) airway differences, infant vs. adult
 - b) Cardiovascular
 - 1) transition, fetal to adult
 - 2) persistent fetal circulation
 - c) Retinopathy of Prematurity: Anesthetic Implications
 - d) Metabolism, Fluid Distribution and Renal Function
 - e) Thermal Regulation (Neutral Temperature, Nonshivering Thermogenesis)
 - f) Fetal Hemoglobin
 - g) Prematurity, Apnea of Prematurity
 - h) Bronchopulmonary Dysplasia

7. Congenital Heart Disease
 - a) Cyanotic Defects
 - b) Acyanotic Defects
 - c) Primary Pulmonary Hypertension
 - d) Altered Uptake/Distribution of IV and Inhalation Anesthetics
 - e) Anesthetic Considerations
 - 1) cardiac surgery; corrective and palliative
 - 2) noncardiac surgery
8. Emergencies in The Newborn
 - a) Diaphragmatic Hernia
 - b) T-E Fistula
 - c) Neonatal Lobar Emphysema
 - d) Pyloric Stenosis
 - e) Necrotizing Enterocolitis
 - f) Omphalocele/Gastroschisis
 - g) RDS: Etiology, Management, Ventilation Techniques
 - h) Myelomeningocele
9. Common Pediatric Medical Problems With Anesthetic Implications
 - a) Upper Respiratory Infections
 - b) Muscular Dystrophies
 - c) Developmental Delay
 - d) Airway Foreign Bodies
10. Postoperative Analgesia
 - a) Systemic Medications and Routes of Administration, Multimodal Therapy
 - b) Regional Techniques: Caudal, Epidural, Nerve Blocks
11. Postoperative Nausea and Vomiting: Risk Factors, Prophylaxis, Treatment

Assessment Tools:

- 1) Checklist of topics to be included in education file
- 2) Post-rotation test to be included in education file
- 3) Direct observation and reported on post-rotation evaluation

Practice-based Learning & Improvement

Residents must demonstrate the ability to update their knowledge base by locating, appraising, and assimilating scientific evidence as it pertains to the patients in the OR. Online computer access will be available in the perioperative area, so that up-to-date evidence-based medical information can be readily accessed. Residents are also expected to teach medical students in the operating room when so assigned.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Interpersonal & Communications Skills

Residents will demonstrate the ability to communicate needs efficiently and clearly (and professionally) to the OR nursing staff. This includes not only verbal skills, but also written skills (including handwriting). Furthermore, residents must demonstrate the ability to clearly communicate with surgical residents and faculty.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Professionalism

Professionalism and interpersonal skills frequently go hand-in-hand. Residents will demonstrate the ability to interact professionally with the permanent OR staff (nursing and support personnel) as well as with the many "transient" health-care providers that pass through on a daily basis, including but not limited to surgeons, Xray technicians, anesthesia technologists, perfusionists, and neuromonitoring technicians. Furthermore, residents must maintain a professional image at all times, especially with respect to patients and their parents/visiting family members.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Systems-based Practice

Residents will demonstrate an understanding of university-based pediatric surgical practice, including its interactions with other specialties, both medical and surgical. Residents will practice cost-effective health care and resource allocation through evidence-based medical practice that does not compromise quality of care.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Goals and Objectives

Preoperative Evaluation Rotation

The ACGME has mandated that all residents receive one month of training in preoperative evaluation and testing. Proper patient selection and prescription of anesthetic plan is a vital part of the perioperative patient management process, as is learning to develop a patient-physician relationship during brief preoperative interactions.

Patient Care Residents will provide preoperative counselling and education in the preoperative evaluation suite. They will be expected to stratify patient risk for the proposed surgical procedure and discuss these risks with the patient and surgeon.

Assessment tools:

1) Direct observation and reported on post-rotation evaluation

Medical Knowledge Residents will demonstrate knowledge of the following topics:

ASA physical status classification system

Stratification of patients to ambulatory versus inpatient settings

Patient education: which medications to take prior to surgery

Patient education: risks of general/regional/MAC

Patient education: risks of PONV

Patient education: choices for pain control...PCA vs. regional analgesia

Patient education: risks of blood product transfusion

When to consult: cardiac clearance

When to consult: pulmonary clearance

When to consult: renal clearance for the dialysis patient

Electrolyte disturbances ... what to do if the K or Na are high or low

Metabolic disturbances ... what to do if the glucose is high or low

Assessment Tools:

1) Checklist of topics to be included in education file

2) Post-rotation test to be included in education file

3) Direct observation and reported on post-rotation evaluation

Practice-based Learning & Improvement

Residents must demonstrate the ability to update their knowledge base by locating, appraising, and assimilating scientific evidence as it pertains to the patients in the preoperative setting. Online computer access will be available, so that up-to-date evidence-based medical information can be readily accessed.

Assessment tools:

1) Direct observation and reported on post-rotation evaluation

Interpersonal & Communications Skills

Residents will demonstrate the ability to communicate needs efficiently and clearly (and professionally) to the preoperative nursing staff. This includes not only verbal skills, but also written skills (including handwriting). Furthermore, residents must demonstrate the ability to clearly communicate with surgical residents and faculty.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Professionalism

Professionalism and interpersonal skills frequently go hand-in-hand. Residents will demonstrate the ability to interact professionally with the permanent preoperative staff (nursing and support personnel) as well as with patients and their parents/visiting family members.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation

Systems-based Practice

Residents will demonstrate an understanding of the financial and resource challenges driving the need for preoperative evaluation. Appropriate patient choice and surgical setting will be stressed, with a focus on providing safe and efficient care resulting in optimal patient satisfaction.

Assessment tools:

- 1) Direct observation and reported on post-rotation evaluation